OSWER Innovations Pilot

Waste-to-Energy Geographic Planning Tool

The Office of Solid Waste and Emergency Response (OSWER) initiated a series of innovative pilots to test new ideas and strategies for environmental and public health protection. A small amount of money is set aside to fund creative proposals. The creative projects test approaches to waste minimization, energy recovery, recycling, land revitalization, and homeland security that may be replicated across various sectors, industries, communities, and regions. We hope these pilots will pave the way for programmatic and policy recommendations by demonstrating the environmental and economic benefits of creative, innovative approaches to the difficult environmental challenges we face today.

BACKGROUND

A huge and mostly untapped source of renewable energy comes from the biomass waste and methane (a powerful greenhouse gas) produced in three primary industries: concentrated animal feeding operations (CAFOs), solid waste landfills (SWLFs), and publicly owned treatment works (POTWs). Waste to Energy (WTE) projects use waste directly as fuel or indirectly as digester-produced methane to generate electricity. By preventing emissions of methane and utilizing biomass, WTE projects could help businesses, states, and communities protect the environment.

Maximizing the potential of WTE projects could lead to reduced environmental impacts, and energy that is more abundant, less dependent on foreign sources, and more reliable. A major impediment to WTE efforts has been coordination among waste generators, those wishing to establish WTE facilities, and the energy grid.

PILOT APPROACH

U.S. EPA Region 6 , will create a tool that can be used to evaluate the potential success of building WTE facilities. Information will be collected on CAFO, SWLF, and POTW locations in the Dallas/Fort Worth area, the biomass quantities and energy content of specific facilities, and critical electric grid parameters. This information will be used to develop a Geographic Information System (GIS) tool to identify single/clusters of facilities that could be prime candidates for WTE projects. An internet website will be developed to assist with public education and to enable interfacing of technologies, waste generators, and WTE developers. The GIS based tool will enable examination of different facility combinations with critical operating and energy content information, electric grid locations and related power concerns, and transportation and land use parameters, to design optimum systems at the best locations. The tool can easily be applied to any area of the country.

INNOVATION

The WTE GIS Tool will be the first large-scale application of its kind in the country. Although there are lists of waste generator facilities, the lists are not complete, nor are they coordinated or linked for use in a WTE effort. This innovative GIS project will bring information on individual biomass operations and energy distribution systems together for the first time. Critical data on transportation, land use, waste storage timing, quality of waste, grid systems, and other parameters can be coordinated. An entirely new culture of innovative solutions to renewable energy production will be enabled by the results of this project. A wealth of previously uncorrelated information will be available to run queries and obtain reports and maps vital to realizing the potential for WTE.

BENEFITS

In addition to energy security benefits, the WTE tool could improve waste management, conserve resources, and help reduce greenhouse gases and impacts to surface and ground water (including phosphorus removal from the watershed). Waste materials and by-products previously land applied as effluent or vented to the atmosphere will instead be reused, reclaimed, and recycled into energy. This highly replicable project will be a model for similar projects throughout the country, allowing for the renewable harvesting of SWLF gas and CAFO and POTW wastes. The tool will enable users to build a business case for WTE operations, and allow waste generators to develop profitable methods to reduce environmental impacts.

CONTACTS

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For additional information, visit the EPA OSWER Innovations web site at: www.epa.gov/oswer/iwg.

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